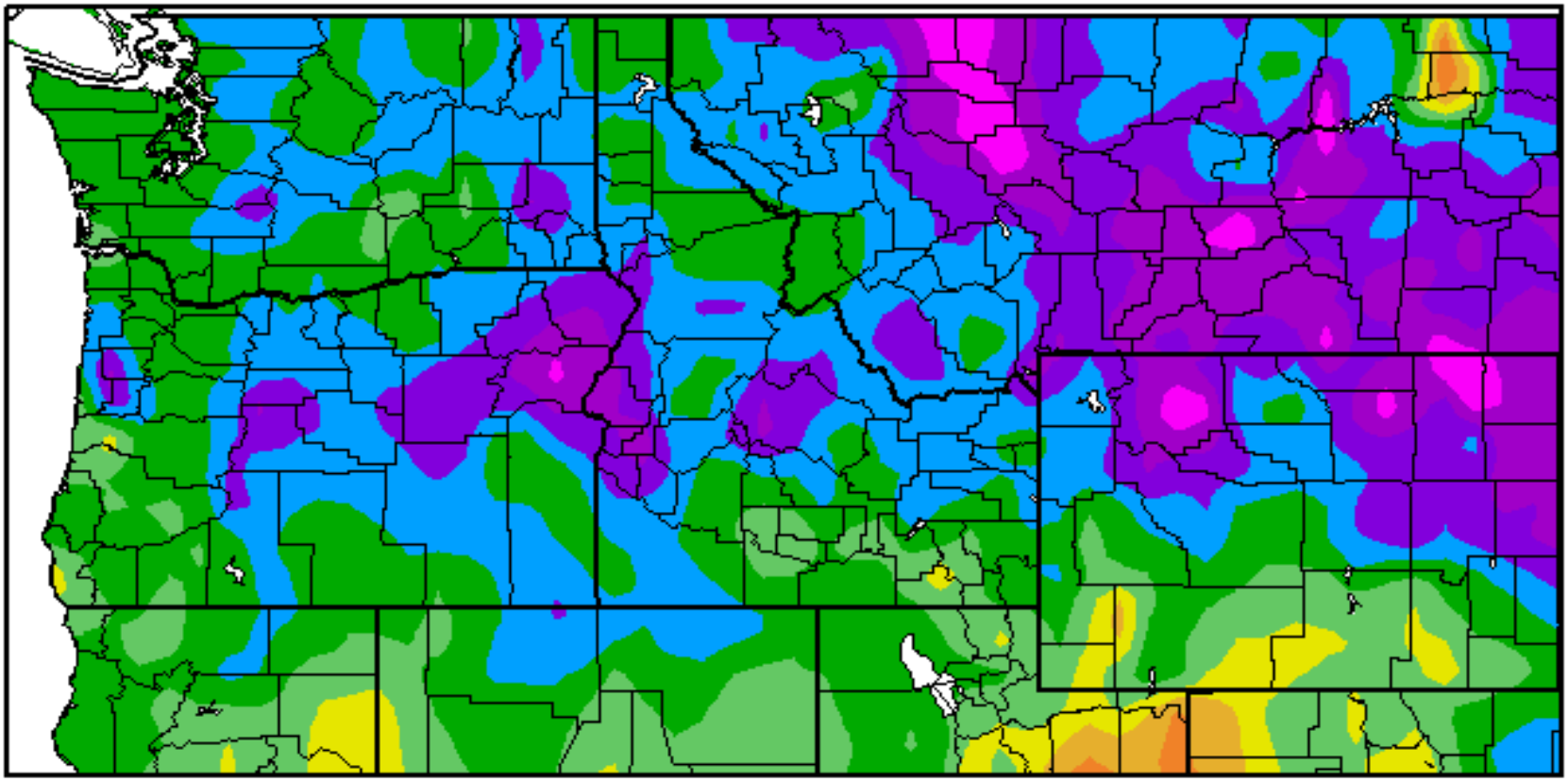
The Month In Review

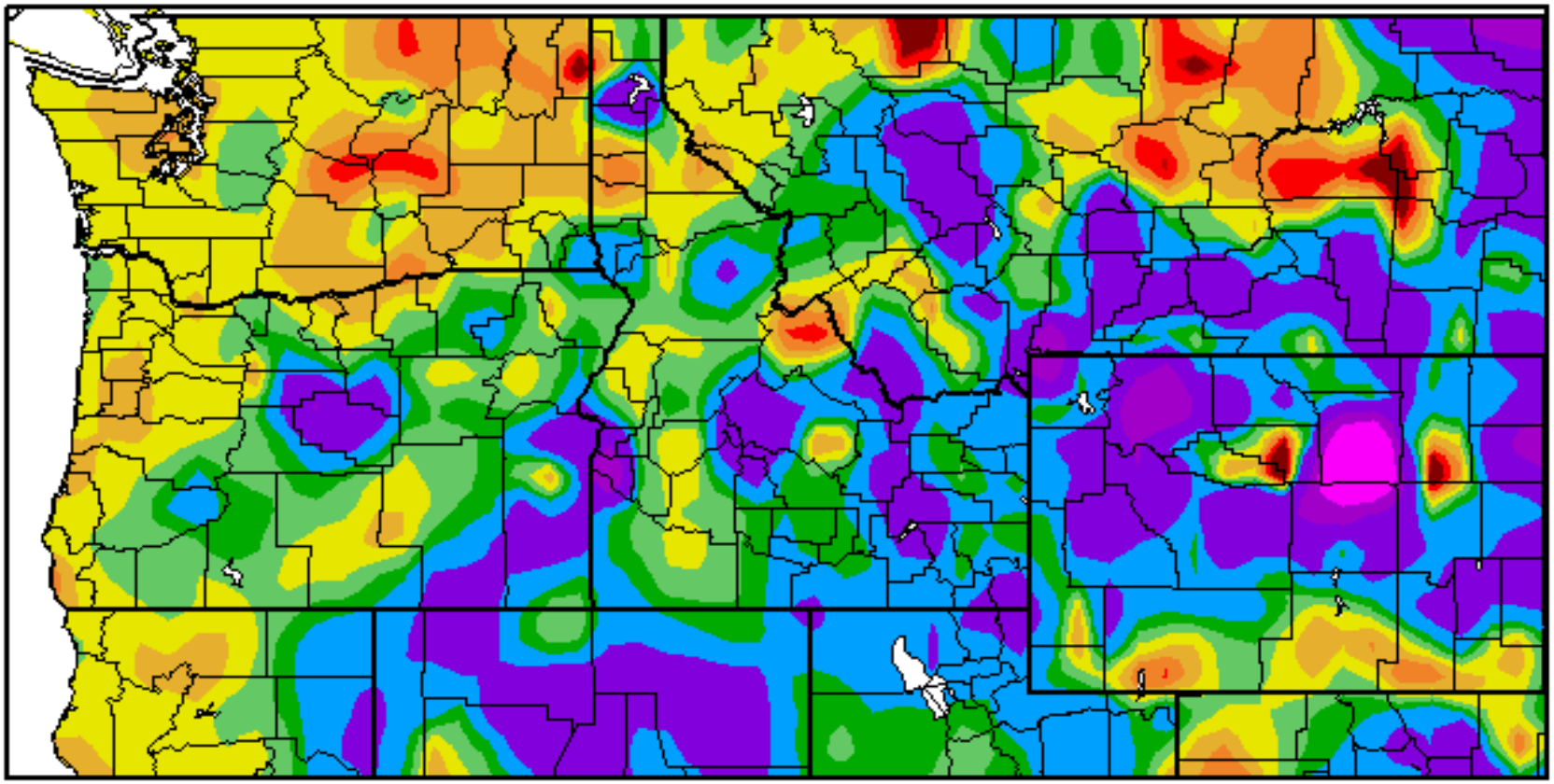
December 2016

National Weather Service
Pendleton, Oregon

Departure from Normal Temperature (F)
12/1/2016 – 12/31/2016



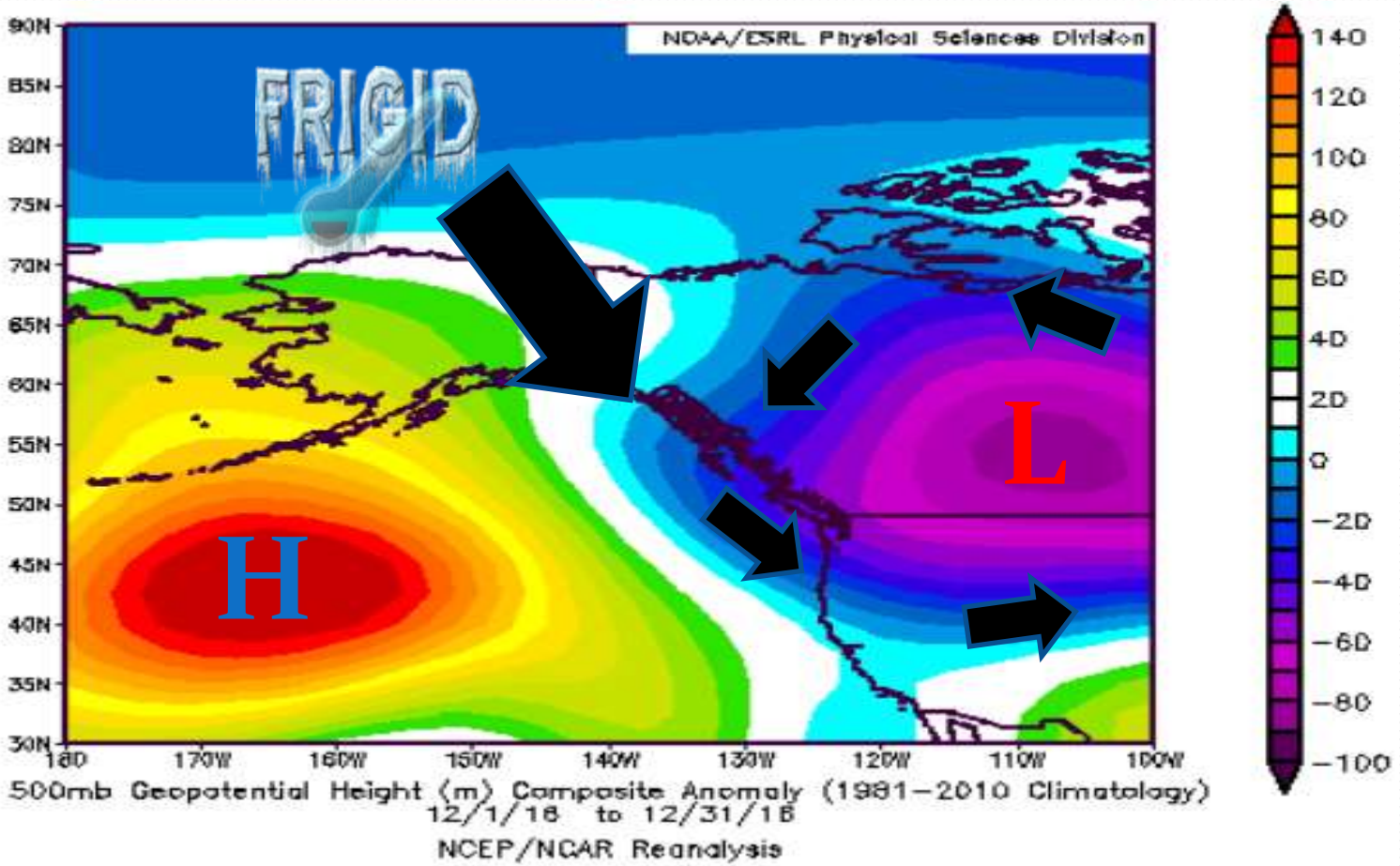
Percent of Normal Precipitation (%)
12/1/2016 – 12/31/2016



Select December Averages and Departures

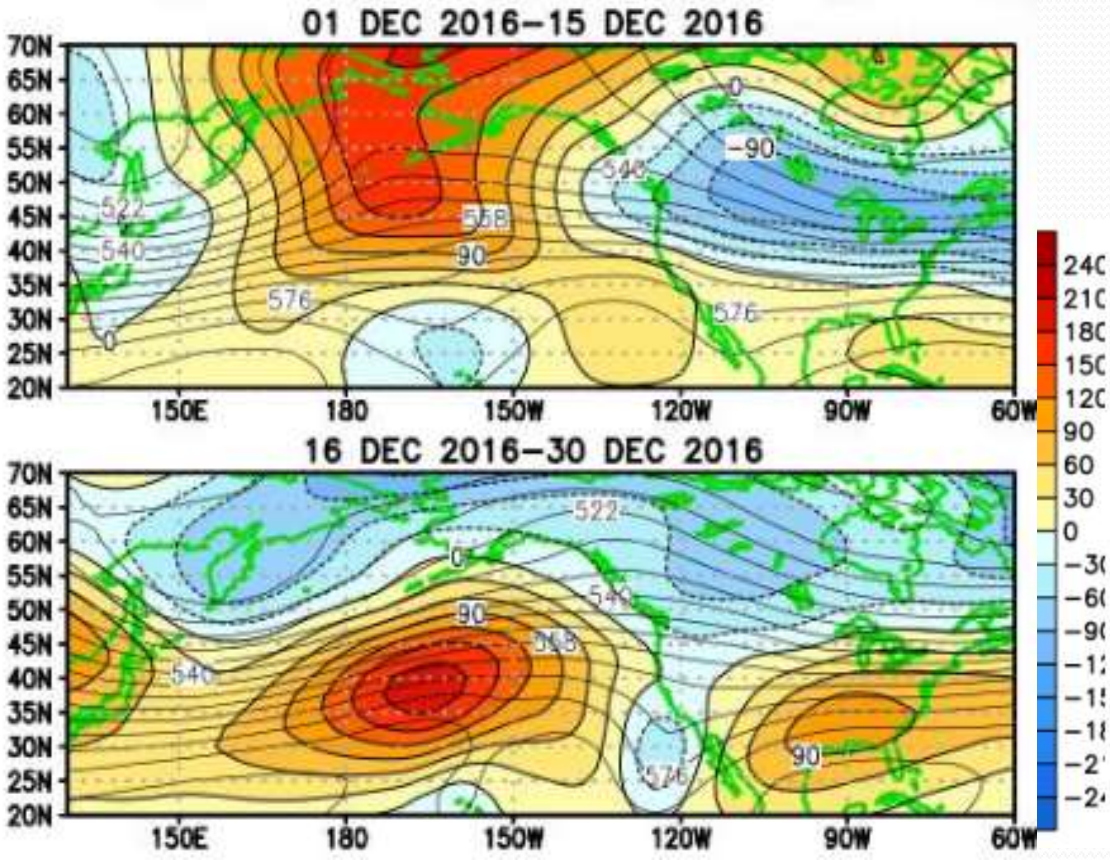
	Max T	Max T D	Min T	Min T D	Ave T	Ave T D	PCPN	PCPN D	Snow	Snow D
Yakima	35.5	-0.3	16.5	-4.8	26.0	-2.5	0.87	-0.66	7.4	-2.3
Kennewick	37.5	-2.4	23.8	-5.0	30.7	-3.7	0.74	-0.39	9	6.8
Walla Walla	36.4	-2.1	22.8	-5.6	29.6	-3.8	2.06	-0.41	16.9	12.5
The Dalles	37.8	-2.5	25.4	-4.8	31.6	-3.6	2.43	-0.30	M	M
Redmond	35.8	-4.7	12.5	-8.2	24.2	-6.5	1.74	0.58	15.5	10.4
Pendleton Airport	35.4	-4.1	20.8	-6.2	28.1	-5.1	2.29	0.82	18.5	12.5
La Grande	31.9	-5.7	14.8	-8.9	23.4	-7.4	2.73	1.07	9	5.8

December 2016 Weather Pattern



The mean synoptic pattern for the month of December 2016 was characterized by a deep trough of abnormally low pressure over southwestern and south central Canada. A piece of this upper level trough also extended to the south over the Pacific Northwest and the northern tier of the US. A large ridge of high pressure was also evident across the Aleutian Islands and western Alaska. This is the classic setup for cold weather in the Northwest, as a north or northeasterly flow of air develops. December ended very cold, with much below normal temperatures in eastern Washington and Oregon. Precipitation amounts were near to above normal for much of Oregon, while ending mainly below normal in Washington. Snowfall was near to above average for much of the area. A deep snowpack has been established for many of the area mountains.

December 2016 Detailed Upper Level Pattern Analysis



- The first two weeks of December featured a large ridge of high pressure over Alaska and northern Canada. With a trough of lower pressure in place across southern Canada and the northern US. This brought very cold and snowy weather to the Pacific Northwest.
- For the second half of the month, the offshore ridge broke down slightly. This allowed some milder Pacific air into our region. Temperatures were not as cold, but precipitation continued at times.

Top 10 Coldest Daily December Lows

City	Rank	Dec 2016 Daily Low	Current or Previous Dec Record Daily Low
Pasco, WA	#1	-9 on 12/17	-6 on 12/16/2008
Hermiston, OR	#2	-13 on 12/17	-16 on 12/16/2008
Sunriver, OR	#5(T)	-14 on 12/17	-27 on 12/08/2013
La Grande, OR	#8(T)	-7 on 12/19	-18 on 12/23/1983
Meacham, OR	#10	-15 on 12/17	-28 on 12/21/1998

Top 5 Coldest Average December Monthly Max T

City	Rank	Dec 2016 Avg Max T	Current or Previous Coldest Dec Avg Max T
Sisters, OR	#1	33.5	33.8 in 2009
John Day, OR	#2	33.6	31.1 in 1983
Cle Elum, WA	#3	29.6	27.5 in 1983
Grizzly, OR	#3	35.1	30.6 in 1983
La Grande, OR	#3	31.9	30.1 in 1985
Long Creek, OR	#3	33.5	31.9 in 1990
Meacham, OR	#4	29.2	26.8 in 1972
Pasco, WA	#4	36.6	34.1 in 2009
Redmond, OR	#4	35.8	30.1 in 1983
Goldendale, WA	#4	33.1	29.4 in 1919
Hermiston, OR	#5	36.9	33.6 in 2009

Top 5 Coldest Average December Monthly Min T

City	Rank	Dec 2016 Avg Min T	Current or Previous Coldest Dec Avg Min T
Redmond, OR	#1	12.5°	14.0 in 2008
Sunriver, OR	#1	9.5°	13.2 in 2008
Meacham, OR	#2	13.5°	13.1 in 2009
John Day, OR	#2	14.9°	13.7 in 1990
La Grande, OR	#2	14.8°	13.7 in 1985
Sisters, OR	#2	10.3°	6.8 in 1985
Pelton Dam, OR	#3	18.7°	17.0 in 1985
Ellensburg, WA	#4	16.7°	10.1 in 1948

Top 5 Coldest Average December Monthly Min T (Cont'd)

City	Rank	Dec 2016 Avg Min T	Current or Previous Coldest Dec Avg Min T
Hermiston, OR	#4	19.9°	18.1 in 2009
Pasco, WA	#4	19.1°	18.1 in 2013
Antelope, OR	#4	15.6°	13.6 in 1985
Grizzly, OR	#4	13.9°	11.3 in 1990
Madras, OR	#4	11.1°	6.2 in 1909
Monument, OR	#4	16.1°	10.2 in 1985
Long Creek, OR	#4	14.3°	10.8 in 1990
Walla Walla, WA	#5 (T)	22.8°	17.2 in 1985

Top 5 Coldest Average December Monthly Temperature

City	Rank	Dec 2016 Avg T	Current or Previous Coldest Dec Avg T
Meacham, OR	#2	21.3°	21.2 in 1972
Redmond, OR	#2	24.1°	23.0 in 1983
John Day, OR	#2	24.7°	23.8 in 1983
La Grande, OR	#2	23.3°	21.3 in 1985
Monument, OR	#2	25.2°	21.9 in 1985
Sisters, OR	#2	21.9°	20.5 in 1985
Pasco, WA	#3	27.9°	26.3 in 2009
Grizzly, OR	#3	25.0°	23.4 in 1948

Top 5 Coldest Average December Monthly Temperature (Cont'd)

City	Rank	Dec 2016 Avg T	Current or Previous Coldest Dec Avg T
Hermiston, OR	#4	28.4°	25.9 in 2009
Madras, OR	#4	23.6°	21.0 in 1985
Prineville, OR	#4	26.0°	23.3 in 1985
Long Creek, OR	#4	23.9°	21.3 in 1990
Pelton Dam, OR	#4	28.3°	24.5 in 1985
Ellensburg, WA	#5	24.5°	18.9 in 1948
Bend, OR	#5	25.2°	22.6 in 1909

Top 5 Monthly Snowfall Records for December

City	Rank	Dec 2016 Snowfall	Current or Previous Highest Dec Snowfall
Pelton Dam, OR	#1	16.0"	11.0" in 1985
Walla Walla, OR	#2	16.9"	23.4" in 1983
Sunriver, OR	#2	29.8"	30.9" in 2008
Spray, OR	#2	13.8"	22.3" in 2008
Pendleton, OR	#3	18.5"	32.5" in 2008
Dayton, WA	#3	19.0"	24.2" in 2008
Antelope, OR	#3	18.0"	29.0" in 1968

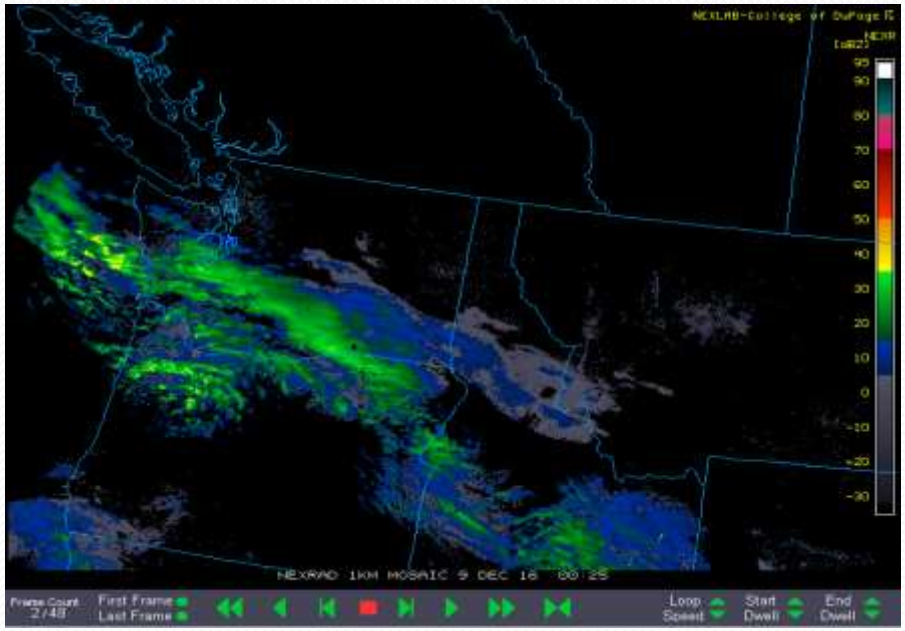
Top 5 Monthly Snowfall Records for December (Cont'd)

City	Rank	Dec 2016 Snowfall	Current or Previous Highest Dec Snowfall
Whitman Mission	#3	14.2"	24.2" in 2008
Meacham, OR	#4	52.0"	68.8" in 1948
Kennewick, WA	#4	9.0"	16.3" in 1955
Madras, OR	#4	16.5"	21.0" in 1909
Condon, OR	#5	17.3"	44.6" in 2008
Arlington, OR	#5	9.0"	13.5" in 1983
Heppner, OR	#5	13.0"	31.0" 2008

December Significant Weather

December 5 – 10th Cold and Snow

Location	Total Snow	Lowest Temp
Pendleton, OR	6.5”	5°
Meacham, OR	13.5”	-11°
Redmond, OR	2.8”	0°
Pasco, WA	2”	13°
Walla Walla, WA	7.7”	13°
Yakima, WA	5.1”	8°
Hermiston, OR	4.9”	12°
Ellensburg, WA	5.9”	10°
Bend, OR	8.3”	2°
Easton, WA	21.0”	12°
Heppner, OR	5.5”	11°



A frontal boundary pushed northward through the area on December 8th and into the 9th bringing a period of steady snow to much of the region. Snowfall amounts over the 5 day period were mainly between 5 to 10 inches for most locations. In the mountains, 1 to 2 feet of new snow fell.

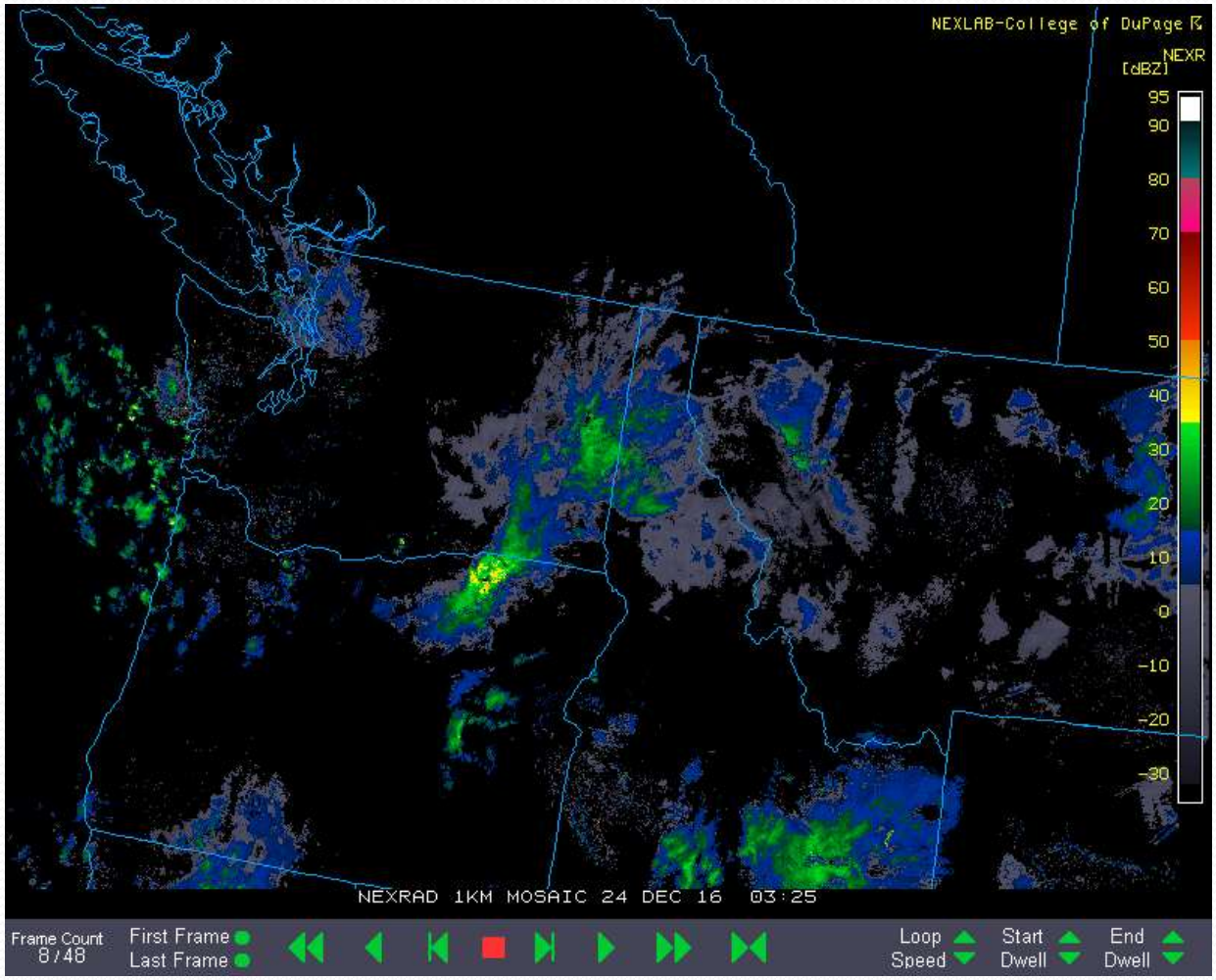
December 12 – 19th Very Cold & More Snow

Location	Total Snow	Lowest Temp
Pendleton, OR	8.6”	-5°
Meacham, OR	15.6”	-15°
Redmond, OR	12.7”	-7°
Pasco, WA	6.0”	-9°
Walla Walla	7.5”	1°
Yakima, WA	2.0”	-4°
Hermiston, OR	3.1”	-13°
Ellensburg, WA	2.3”	-3°
Heppner, OR	6.5”	2°
Easton, WA	10.0”	9°
Madras, OR	11.0”	-6°
Bend, OR	13.1”	-2°
Dayville, OR	4.6”	-2°
Condon, OR	8.9”	-1°
Mitchell, OR	7.4”	0°
La Grande, OR	5.6”	-7°

On December 14th and 15th a strong area of low pressure passed eastward across southern Oregon. A cold wedge of air remained in place over much of Northeast Oregon and southern Washington. Periods of moderate to even heavy snow developed over the area. 7 day snow totals of 6 to 15 inches were common over much of the forecast area. The hardest hit areas were Central Oregon and the Blue Mountains. Temperatures dropped well below zero in many locations after the snowfall.

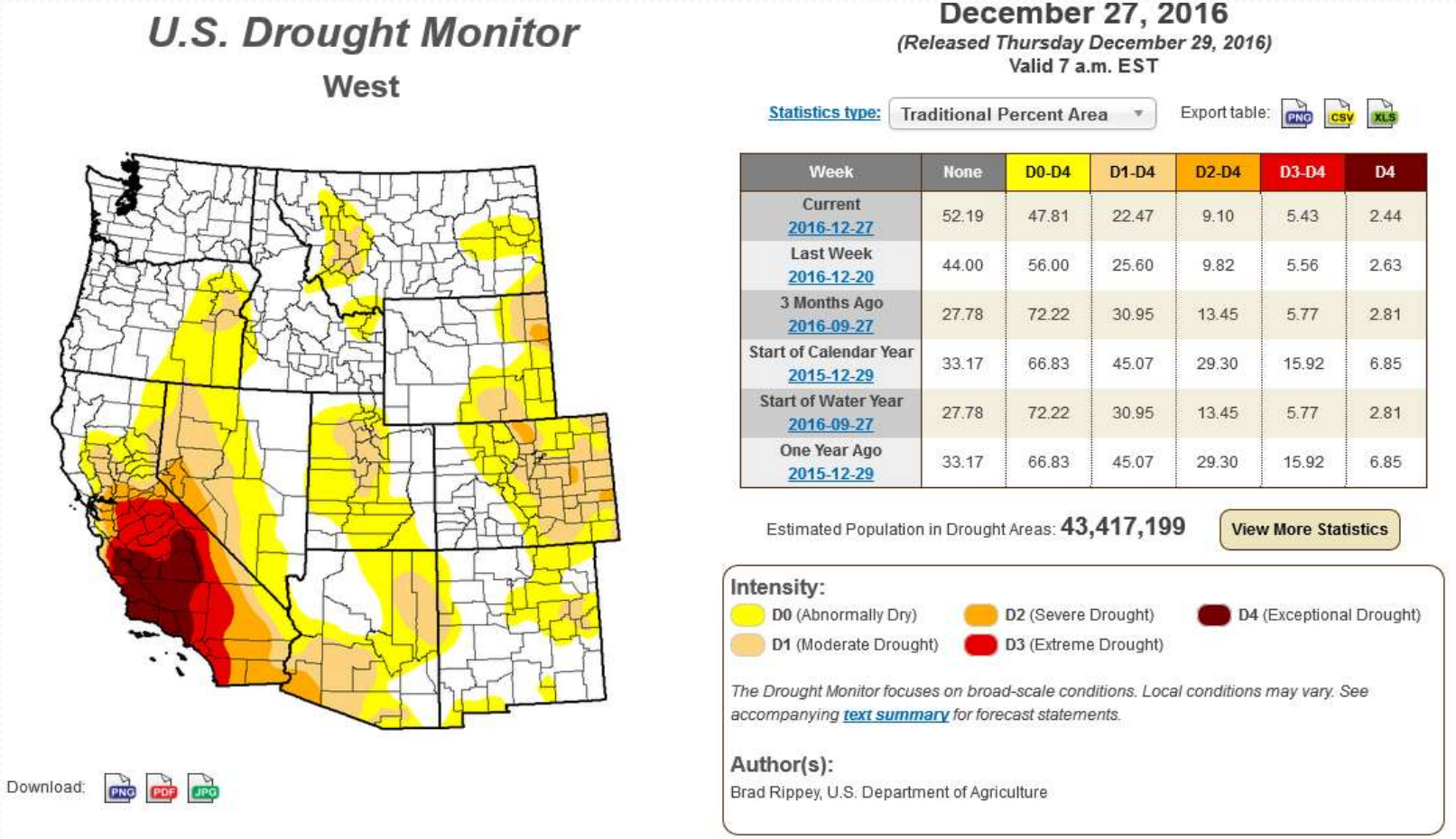
December 23 – 24th Wintry Mix

Location	Total Snow	Frz Rain?
Pendleton	3.4”	Y
Meacham	7.0”	N
Redmond	Trace	N
Pasco	1.0”	N
Walla Walla	1.0”	Y
Yakima	0.3”	N
Hermiston	0.1”	Y
Ellensburg	0.8”	N
Condon	1.2”	Y
Easton	Trace	N
Heppner	1.0”	N/A
John Day	4.2”	N



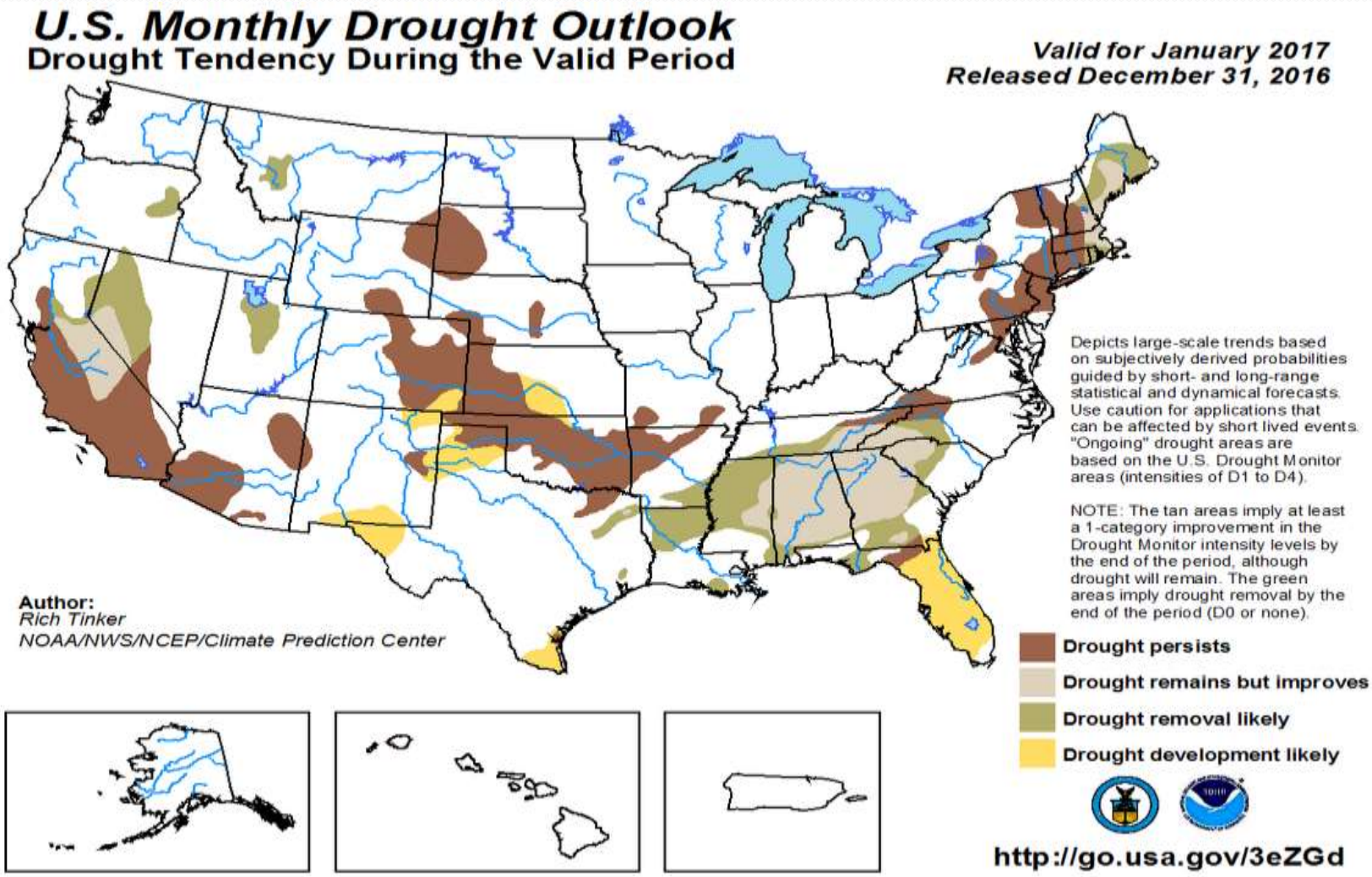
A storm system moved through the area bringing a mixture or snow, sleet, freezing rain and some rain. Snowfall was very wet and slick. Numerous accidents were reported on area roadways due to the wintry mix.

Drought Improves



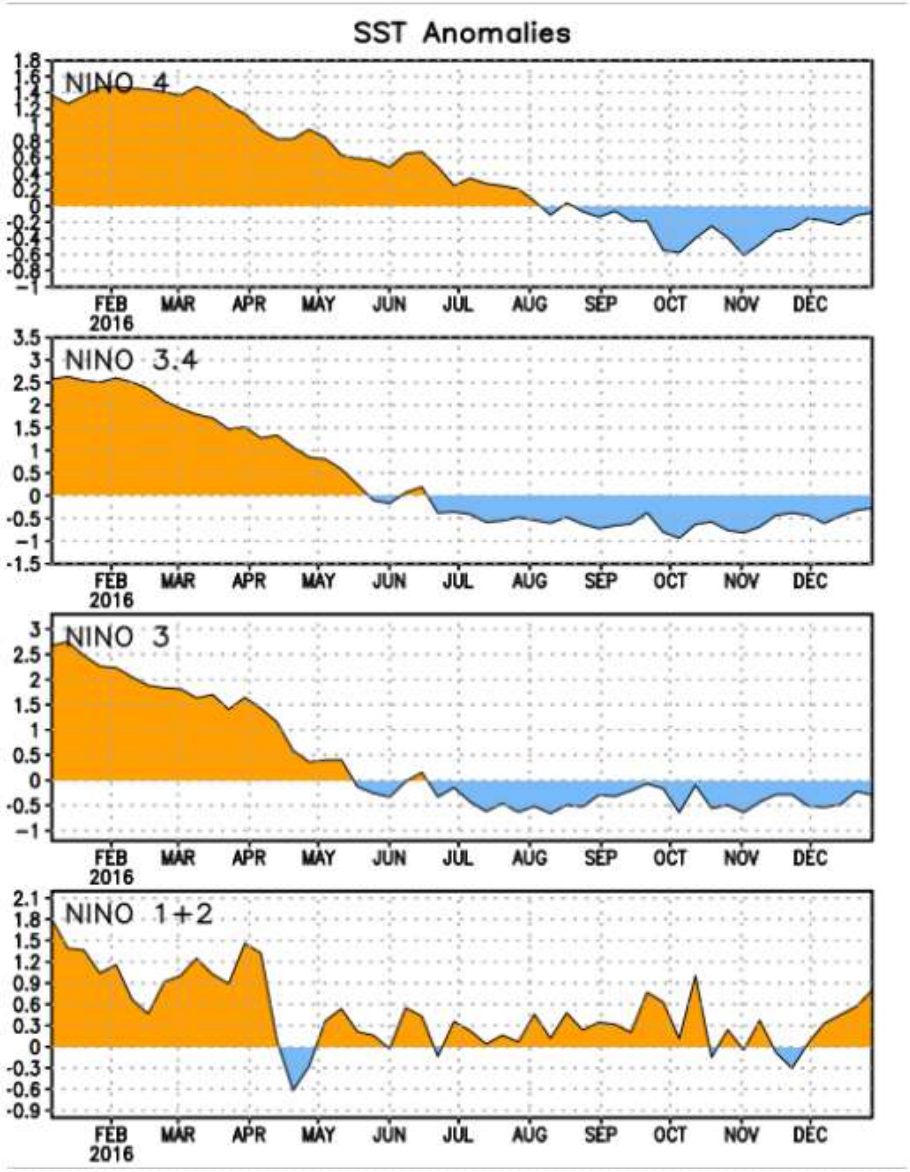
The latest drought monitor shows improvement over much of the region. Some Do and even a very small area of D1 drought is lingering over eastern, and especially southeastern Oregon. The substantial October rainfall, periods of rain through November, and periods of snow and rain in December allowed much of the area to be removed from any drought categories.

January Drought Outlook

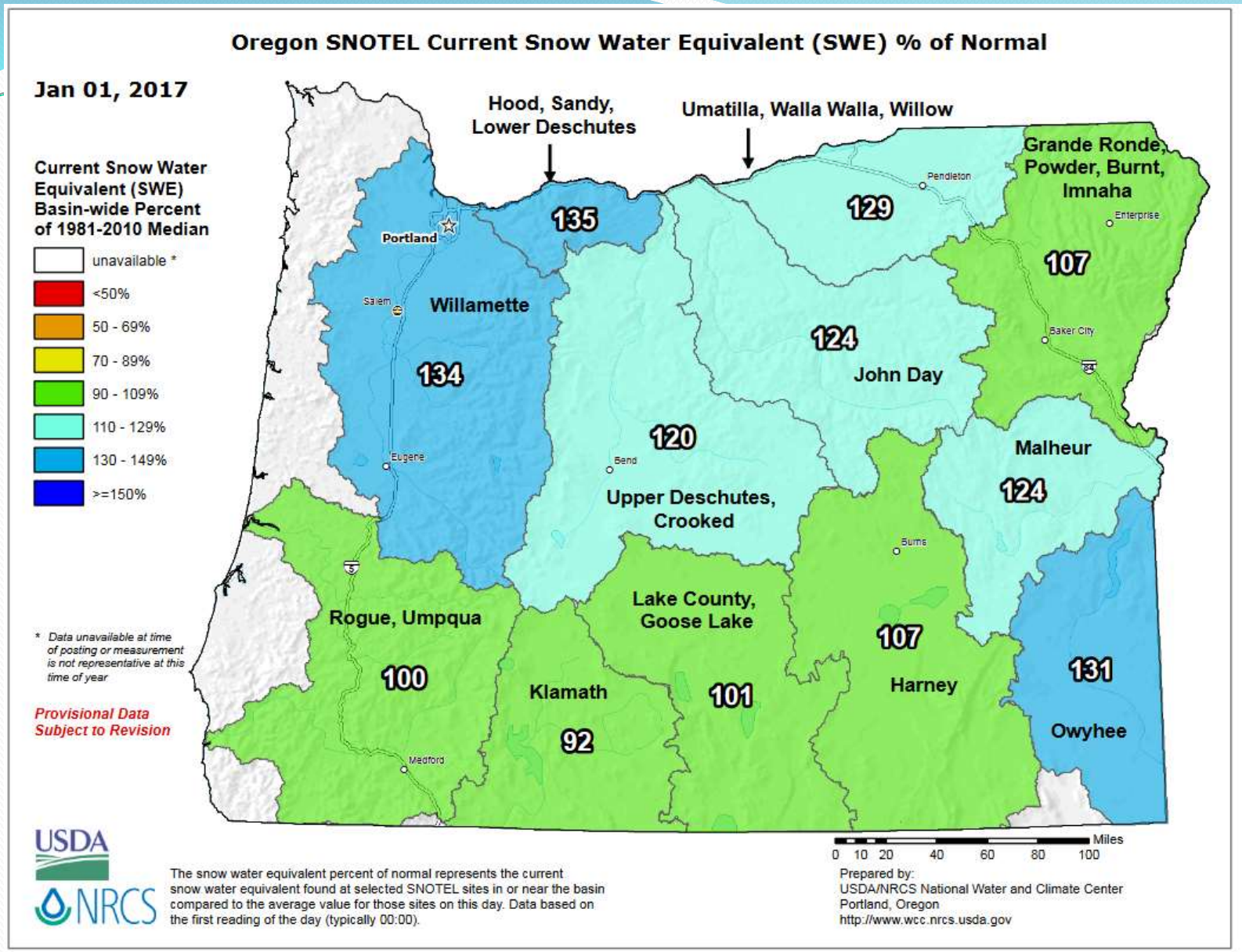


The monthly drought outlook for January from CPC indicates drought removal likely across most of eastern Oregon. A deep mountain snow pack is beginning to develop.

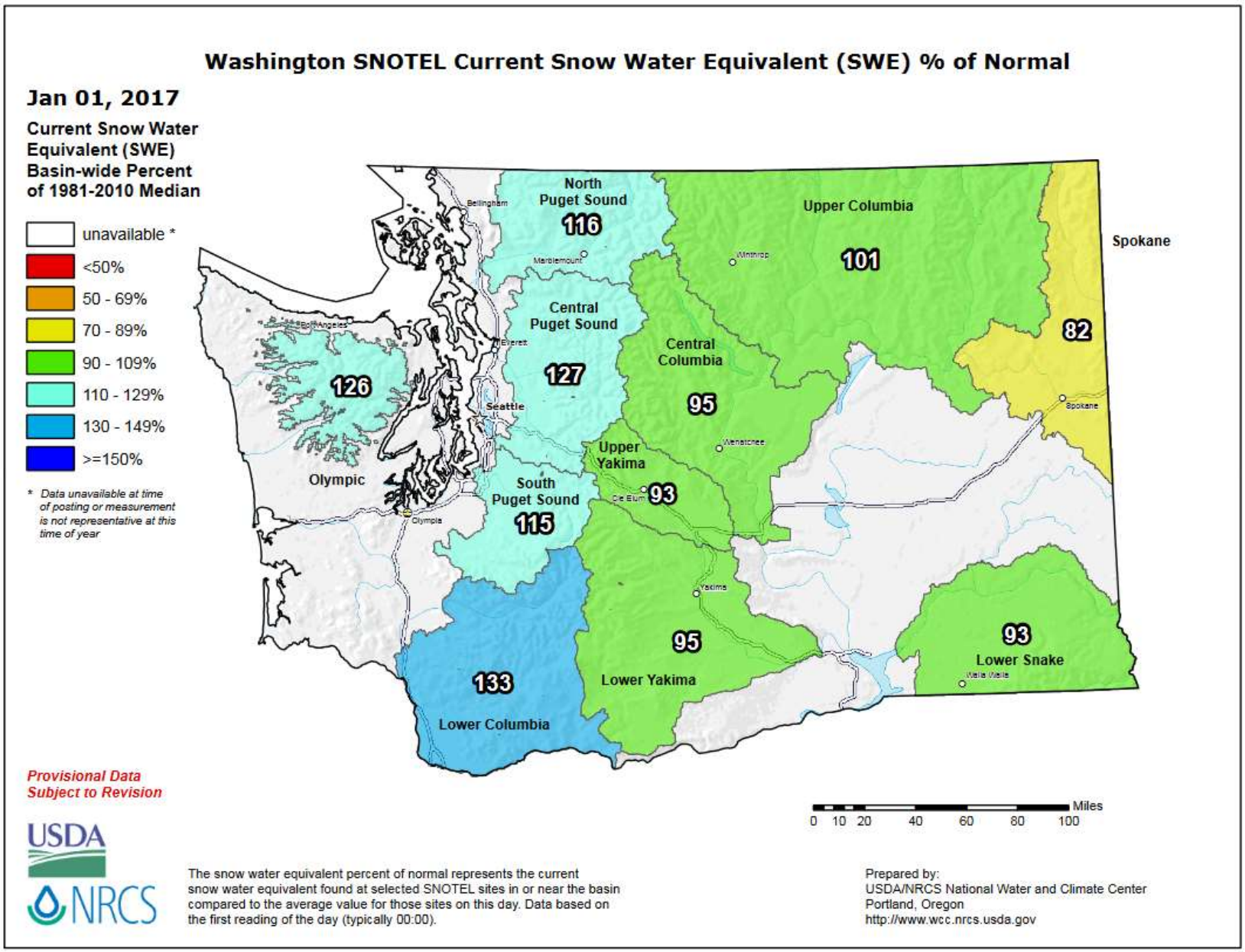
La Nina Advisory Continues



- Currently, cooler than average sea surface temperatures were observed in all Nino regions except, 1 &2.
- A La Nina Advisory continues, which means La Nina Conditions are now present.
- A transition to ENSO Neutral Conditions is expected between now and March 2017.
- This La Nina is expected to remain weak, but is still having an impact on the atmospheric weather patterns this winter.



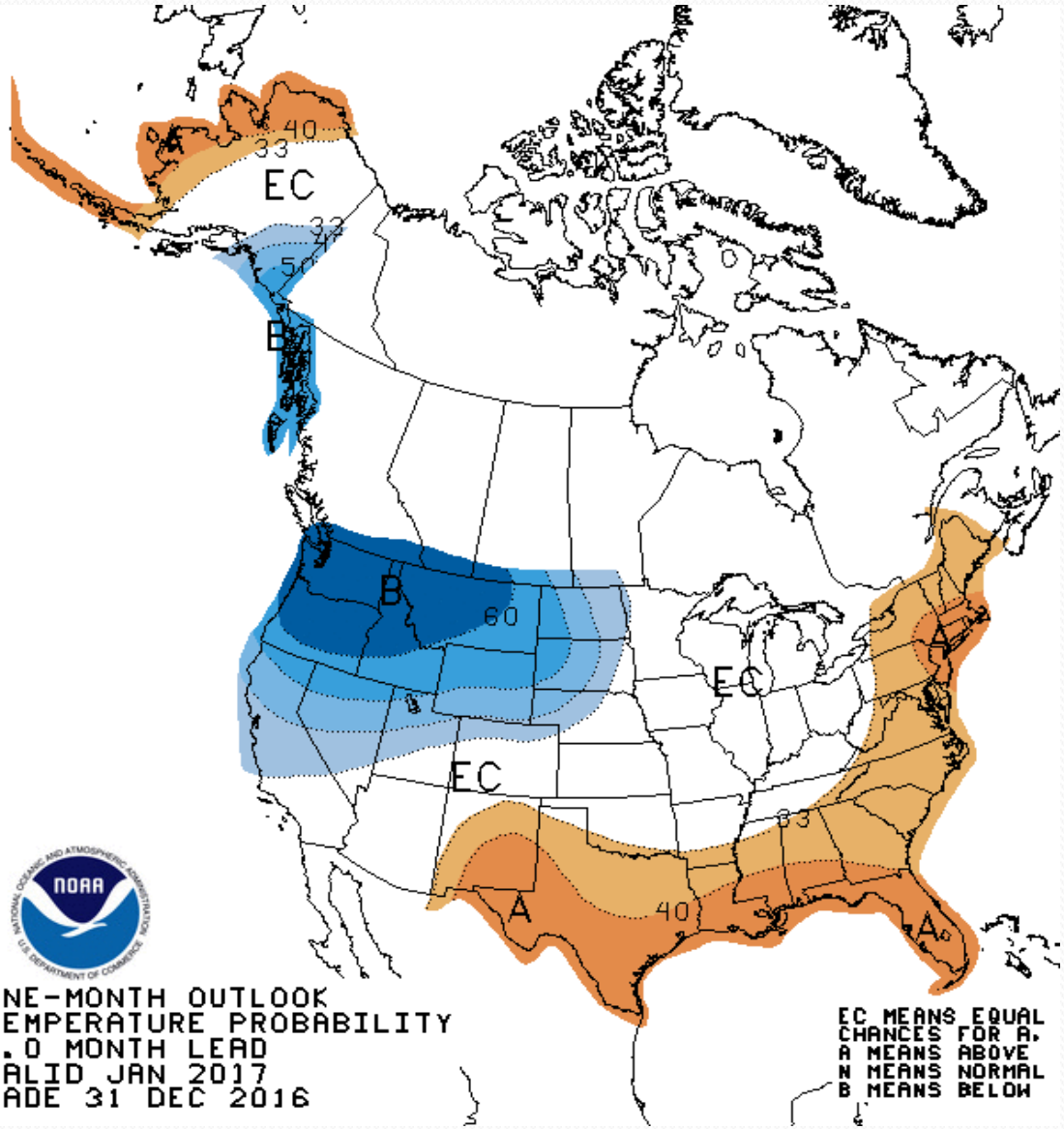
Snow pack is running between about 105 to 135 percent of normal across Oregon as of January 1st 2017. Additional snow has already fallen in the first few days of January, and more is expected through the month.



Snow pack has rapidly increased to between 90-130 percent of normal across the state of Washington as of Jan 1st. The forecast calls for more snowy periods through January.

January Outlook

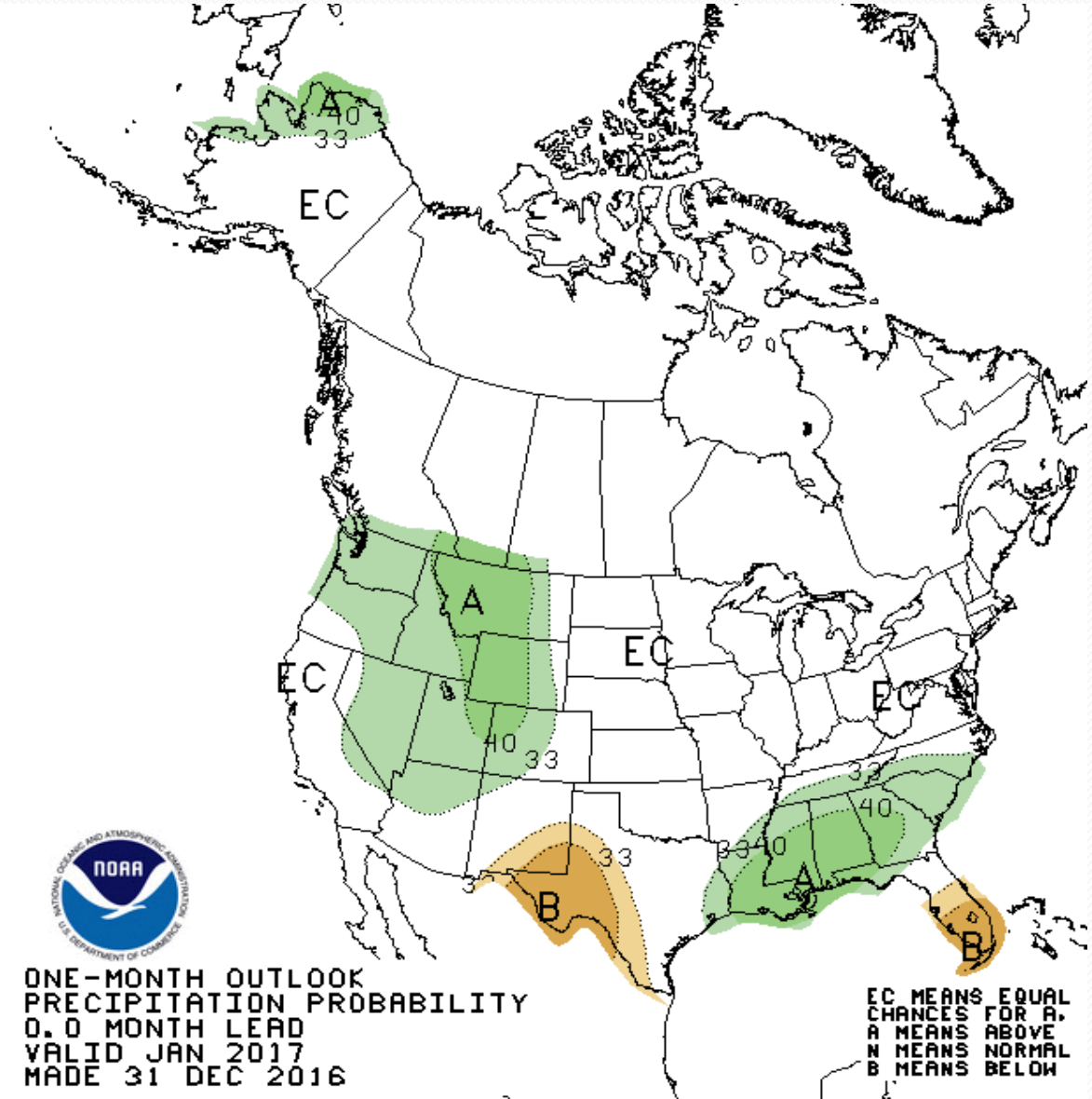
January Temperature Outlook



This graphic is issued by the Climate Prediction Center or CPC and is the Temperature Outlook for the month of January. The cool colors indicate a greater chance of below normal temperatures and the warm colors represent a greater chance of above normal temperatures. The time period for the normals runs from 1981-2010.

Temperatures in January are forecast to likely remain below normal across the Pacific Northwest. This area of higher probabilities of below normal temperatures also extends to include most of the western US. Higher chances for above normal temperatures can be found across the south and up the East Coast.

January Precipitation Outlook



This graphic is CPC's Precipitation Outlook for the month of January. The green colors represent a greater chance of above normal precipitation, and the brown colors represent a greater chance of below normal precipitation. Much of eastern Washington and eastern Oregon have higher probabilities for above average precipitation totals in January However, the highest probabilities for above average precipitation will be found along and just east of the Continental Divide, in Montana, Wyoming and Colorado. There will also be an area above average precipitation over the Lower Mississippi Valley and Southeast. Drier than average conditions are favored over W. Texas and S. Florida.

Thank You!